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TECH CENTER 1600/2900

SEQUENCE LISTING

<110> Pioneer HiBred International  
Bulla, Lee A.

<120> RECEPTOR FOR A BACILLUS THURINGIENSIS  
TOXIN

<130> 27112-20037.13

<140> 09/457,864  
<141> 1999-12-10

<150> US 08/326,117  
<151> 1994-10-19

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B7

u8

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Thr Phe Asp Glu Thr Glu Gly Glu Gly Phe Phe Val Ala Lys Ala Val	
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Ala His Asp Arg Asp Ile Gly Asp Val Val Glu His Thr Leu Leu Gly	
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Val Ser Ala Asn Asp Ser Phe Asn Tyr His Arg Glu Ser Glu Leu Phe	
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Asp Thr Pro Pro Arg Phe His Leu Tyr Tyr Thr Val Val Ala Ser Asp	830	835	840	
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Arg Cys Ser Thr Glu Asp Pro Ala Asp Cys Pro Pro Asp Pro Thr Tyr	845	850	855	860
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Tyr Glu Asn Ala Thr His Leu Asp Glu Val Val Thr Leu Ile Ala Ser	895	900	905	
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Asp Leu Asp Arg Asp Glu Ile Tyr His Thr Val Ser Tyr Val Ile Asn	910	915	920	
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50 55 60			
Cys Met Asp Ala Tyr His Val Ile Thr Ala Asn Leu Gly Thr Gln Val			
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Glu Trp His Leu Ile Ile Thr Gln Arg Gln His Tyr Glu Leu Pro Gly			
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Arg	Trp	Leu	Glu	Ile	Phe	Ala	Val	Gln	Gln	Phe	Glu	Glu	Lys	Ser	Tyr	290	295	300
Gln	Asn	Phe	Thr	Val	Arg	Ala	Ile	Asp	Gly	Asp	Thr	Glu	Ile	Asn	Met	305	310	315
Pro	Ile	Asn	Tyr	Arg	Leu	Ile	Thr	Asn	Glu	Glu	Asp	Thr	Phe	Phe	Ser	325	330	335
Ile	Glu	Ala	Leu	Pro	Gly	Gly	Lys	Ser	Gly	Ala	Val	Phe	Leu	Val	Ser	340	345	350
Pro	Ile	Asp	Arg	Asp	Thr	Leu	Gln	Arg	Glu	Val	Phe	Pro	Leu	Thr	Ile	355	360	365
Val	Ala	Tyr	Lys	Tyr	Asp	Glu	Glu	Ala	Phe	Ser	Thr	Ser	Thr	Asn	Val	370	375	380
Val	Ile	Ile	Val	Thr	Asp	Ile	Asn	Asp	Gln	Arg	Pro	Glu	Pro	Ile	His	385	390	395
Lys	Glu	Tyr	Arg	Leu	Ala	Ile	Met	Glu	Glu	Thr	Pro	Leu	Thr	Leu	Asn	405	410	415
Phe	Asp	Lys	Glu	Phe	Gly	Phe	His	Asp	Lys	Asp	Leu	Gly	Gln	Asn	Ala	420	425	430
Gln	Tyr	Thr	Val	Arg	Leu	Glu	Ser	Val	Asp	Pro	Pro	Gly	Ala	Ala	Glu	435	440	445
Ala	Phe	Tyr	Ile	Ala	Pro	Glu	Val	Gly	Tyr	Gln	Arg	Gln	Thr	Phe	Ile	450	455	460
Met	Gly	Thr	Leu	Asn	His	Ser	Met	Leu	Asp	Tyr	Glu	Val	Pro	Glu	Phe	465	470	475
Gln	Ser	Ile	Thr	Ile	Arg	Val	Val	Ala	Thr	Asp	Asn	Asn	Asp	Thr	Arg	485	490	495
His	Val	Gly	Val	Ala	Leu	Val	His	Ile	Asp	Leu	Ile	Asn	Trp	Asn	Asp	500	505	510
Glu	Gln	Pro	Ile	Phe	Glu	His	Ala	Val	Gln	Thr	Val	Thr	Phe	Asp	Glu	515	520	525
Thr	Glu	Gly	Glu	Gly	Phe	Phe	Val	Ala	Lys	Ala	Val	Ala	His	Asp	Arg	530	535	540
Asp	Ile	Gly	Asp	Val	Val	Glu	His	Thr	Leu	Leu	Gly	Asn	Ala	Val	Asn	545	550	555
Phe	Leu	Thr	Ile	Asp	Lys	Leu	Thr	Gly	Asp	Ile	Arg	Val	Ser	Ala	Asn	565	570	575
Asp	Ser	Phe	Asn	Tyr	His	Arg	Glu	Ser	Glu	Leu	Phe	Val	Gln	Val	Arg	580	585	590
Ala	Thr	Asp	Thr	Leu	Gly	Glu	Pro	Phe	His	Thr	Ala	Thr	Ser	Gln	Leu	595	600	605
Val	Ile	Arg	Leu	Asn	Asp	Ile	Asn	Asn	Thr	Pro	Pro	Thr	Leu	Arg	Leu	610	615	620
Pro	Arg	Gly	Ser	Pro	Gln	Val	Glu	Glu	Asn	Val	Pro	Asp	Gly	His	Val	625	630	635
Ile	Thr	Gln	Glu	Leu	Arg	Ala	Thr	Asp	Pro	Asp	Thr	Thr	Ala	Asp	Leu	645	650	655
Arg	Phe	Glu	Ile	Asn	Trp	Asp	Thr	Ser	Phe	Ala	Thr	Lys	Gln	Gly	Arg	660	665	670
Gln	Ala	Asn	Pro	Asp	Glu	Phe	Arg	Asn	Cys	Val	Glu	Ile	Glu	Thr	Ile	675	680	685
Phe	Pro	Glu	Ile	Asn	Asn	Arg	Gly	Leu	Ala	Ile	Gly	Arg	Val	Val	Ala	690	695	700
Arg	Glu	Ile	Arg	His	Asn	Val	Thr	Ile	Asp	Tyr	Glu	Glu	Phe	Glu	Val	705	710	715
Leu	Ser	Leu	Thr	Val	Arg	Val	Arg	Asp	Leu	Asn	Thr	Val	Tyr	Gly	Asp	725	730	735
Asp	Tyr	Asp	Glu	Ser	Met	Leu	Thr	Ile	Thr	Ile	Ile	Asp	Met	Asn	Asp			

Asn	Ala	Pro	Val	Trp	Val	Glu	Gly	Thr	Leu	Glu	Gln	Asn	Phe	Arg	Val
		755					760					765			
Arg	Glu	Met	Ser	Ala	Gly	Gly	Leu	Val	Val	Gly	Ser	Val	Arg	Ala	Asp
		770				775					780				
Asp	Ile	Asp	Gly	Pro	Leu	Tyr	Asn	Gln	Val	Arg	Tyr	Thr	Ile	Phe	Pro
785					790					795					800
Arg	Glu	Asp	Thr	Asp	Lys	Asp	Leu	Ile	Met	Ile	Asp	Phe	Leu	Thr	Gly
				805					810					815	
Gln	Ile	Ser	Val	Asn	Thr	Ser	Gly	Ala	Ile	Asp	Ala	Asp	Thr	Pro	Pro
			820					825					830		
Arg	Phe	His	Leu	Tyr	Tyr	Thr	Val	Val	Ala	Ser	Asp	Arg	Cys	Ser	Thr
		835					840					845			
Glu	Asp	Pro	Ala	Asp	Cys	Pro	Pro	Asp	Pro	Thr	Tyr	Trp	Glu	Thr	Glu
	850					855					860				
Gly	Asn	Ile	Thr	Ile	His	Ile	Thr	Asp	Thr	Asn	Asn	Lys	Val	Pro	Gln
865					870					875					880
Ala	Glu	Thr	Thr	Lys	Phe	Asp	Thr	Val	Val	Tyr	Ile	Tyr	Glu	Asn	Ala
				885					890					895	
Thr	His	Leu	Asp	Glu	Val	Val	Thr	Leu	Ile	Ala	Ser	Asp	Leu	Asp	Arg
		900						905					910		
Asp	Glu	Ile	Tyr	His	Thr	Val	Ser	Tyr	Val	Ile	Asn	Tyr	Ala	Val	Asn
		915					920					925			
Pro	Arg	Leu	Met	Asn	Phe	Phe	Ser	Val	Asn	Arg	Glu	Thr	Gly	Leu	Val
	930					935					940				
Tyr	Val	Asp	Tyr	Glu	Thr	Gln	Gly	Ser	Gly	Glu	Val	Leu	Asp	Arg	Asp
945					950					955					960
Gly	Asp	Glu	Pro	Thr	His	Arg	Ile	Phe	Phe	Asn	Leu	Ile	Asp	Asn	Phe
				965					970					975	
Met	Gly	Glu	Gly	Glu	Gly	Asn	Arg	Asn	Gln	Asn	Asp	Thr	Glu	Val	Leu
			980					985					990		
Val	Ile	Leu	Leu	Asp	Val	Asn	Asp	Asn	Ala	Pro	Glu	Leu	Pro	Pro	Pro
		995					1000					1005			
Ser	Glu	Leu	Ser	Trp	Thr	Ile	Ser	Glu	Asn	Leu	Lys	Gln	Gly	Val	Arg
	1010					1015					1020				
Leu	Glu	Pro	His	Ile	Phe	Ala	Pro	Asp	Arg	Asp	Glu	Pro	Asp	Thr	Asp
1025					1030					1035					1040
Asn	Ser	Arg	Val	Gly	Tyr	Glu	Ile	Leu	Asn	Leu	Ser	Thr	Glu	Arg	Asp
				1045					1050					1055	
Ile	Glu	Val	Pro	Glu	Leu	Phe	Val	Met	Ile	Gln	Ile	Ala	Asn	Val	Thr
			1060					1065					1070		
Gly	Glu	Leu	Glu	Thr	Ala	Met	Asp	Leu	Lys	Gly	Tyr	Trp	Gly	Thr	Tyr
		1075					1080					1085			
Ala	Ile	His	Ile	Arg	Ala	Phe	Asp	His	Gly	Ile	Pro	Gln	Met	Ser	Met
	1090					1095					1100				
Asn	Glu	Thr	Tyr	Glu	Leu	Ile	Ile	His	Pro	Phe	Asn	Tyr	Tyr	Ala	Pro
1105					1110					1115					1120
Glu	Phe	Val	Phe	Pro	Thr	Asn	Asp	Ala	Val	Ile	Arg	Leu	Ala	Arg	Glu
				1125					1130					1135	
Arg	Ala	Val	Ile	Asn	Gly	Val	Leu	Ala	Thr	Val	Asn	Gly	Glu	Phe	Leu
			1140					1145					1150		
Glu	Arg	Ile	Ser	Ala	Thr	Asp	Pro	Asp	Gly	Leu	His	Ala	Gly	Val	Val
		1155					1160					1165			
Thr	Phe	Gln	Val	Val	Gly	Asp	Glu	Glu	Ser	Gln	Arg	Tyr	Phe	Gln	Val
	1170					1175					1180				
Val	Asn	Asp	Gly	Glu	Asn	Leu	Gly	Ser	Leu	Arg	Leu	Leu	Gln	Ala	Val
1185					1190					1195					1200

Pro Glu Glu Ile Arg Glu Phe Arg Ile Thr Ile Arg Ala Thr Asp Gln  
 1205 1210 1215  
 Gly Thr Asp Pro Gly Pro Leu Ser Thr Asp Met Thr Phe Arg Val Val  
 1220 1225 1230  
 Phe Val Pro Thr Gln Gly Glu Pro Arg Phe Ala Ser Ser Glu His Ala  
 1235 1240 1245  
 Val Ala Phe Ile Glu Lys Ser Ala Gly Met Glu Glu Ser His Gln Leu  
 1250 1255 1260  
 Pro Leu Ala Gln Asp Ile Lys Asn His Leu Cys Glu Asp Asp Cys His  
 1265 1270 1275 1280  
 Ser Ile Tyr Tyr Arg Ile Ile Asp Gly Asn Ser Glu Gly His Phe Gly  
 1285 1290 1295  
 Leu Asp Pro Val Arg Asn Arg Leu Phe Leu Lys Lys Glu Leu Ile Arg  
 1300 1305 1310  
 Glu Gln Ser Ala Ser His Thr Leu Gln Val Ala Ala Ser Asn Ser Pro  
 1315 1320 1325  
 Asp Gly Gly Ile Pro Leu Pro Ala Ser Ile Leu Thr Val Thr Val Thr  
 1330 1335 1340  
 Val Arg Glu Ala Asp Pro Arg Pro Val Phe Val Arg Glu Leu Tyr Thr  
 1345 1350 1355 1360  
 Ala Gly Ile Ser Thr Ala Asp Ser Ile Gly Arg Glu Leu Leu Arg Leu  
 1365 1370 1375  
 His Ala Thr Gln Ser Glu Gly Ser Ala Ile Thr Tyr Ala Ile Asp Tyr  
 1380 1385 1390  
 Asp Thr Met Val Val Asp Pro Ser Leu Glu Ala Val Arg Gln Ser Ala  
 1395 1400 1405  
 Phe Val Leu Asn Ala Gln Thr Gly Val Leu Thr Leu Asn Ile Gln Pro  
 1410 1415 1420  
 Thr Ala Thr Met His Gly Leu Phe Lys Phe Glu Val Thr Ala Thr Asp  
 1425 1430 1435 1440  
 Thr Ala Gly Ala Gln Asp Arg Thr Asp Val Thr Val Tyr Val Val Ser  
 1445 1450 1455  
 Ser Gln Asn Arg Val Tyr Phe Val Phe Val Asn Thr Leu Gln Gln Val  
 1460 1465 1470  
 Glu Asp Asn Arg Asp Phe Ile Ala Asp Thr Phe Ser Ala Gly Phe Asn  
 1475 1480 1485  
 Met Thr Cys Asn Ile Asp Gln Val Val Pro Ala Asn Asp Pro Val Thr  
 1490 1495 1500  
 Gly Val Ala Leu Glu His Ser Thr Gln Met Arg Gly His Phe Ile Arg  
 1505 1510 1515 1520  
 Asp Asn Val Pro Val Leu Ala Asp Glu Ile Glu Gln Ile Arg Ser Asp  
 1525 1530 1535  
 Leu Val Leu Leu Ser Ser Ile Gln Thr Thr Leu Ala Ala Arg Ser Leu  
 1540 1545 1550  
 Val Leu Gln Asp Leu Leu Thr Asn Ser Ser Pro Asp Ser Ala Pro Asp  
 1555 1560 1565  
 Ser Ser Leu Thr Val Tyr Val Leu Ala Ser Leu Ser Ala Val Leu Gly  
 1570 1575 1580  
 Phe Met Cys Leu Val Leu Leu Leu Thr Phe Ile Ile Arg Thr Arg Ala  
 1585 1590 1595 1600  
 Leu Asn Arg Arg Leu Glu Ala Leu Ser Met Thr Lys Tyr Gly Ser Leu  
 1605 1610 1615  
 Asp Ser Gly Leu Asn Arg Ala Gly Ile Ala Ala Pro Gly Thr Asn Lys  
 1620 1625 1630  
 His Thr Val Glu Gly Ser Asn Pro Ile Phe Asn Glu Ala Ile Lys Thr  
 1635 1640 1645  
 Pro Asp Leu Asp Ala Ile Ser Glu Gly Ser Asn Asp Ser Asp Leu Ile

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B

1650                      1655                      1660  
 Gly Ile Glu Asp Leu Pro His Phe Gly Asn Val Phe Met Asp Pro Glu  
 1665                      1670                      1675                      1680  
 Val Asn Glu Lys Ala Asn Gly Tyr Pro Glu Val Ala Asn His Asn Asn  
                     1685                      1690                      1695  
 Asn Phe Ala Phe Asn Pro Thr Pro Phe Ser Pro Glu Phe Val Asn Gly  
                     1700                      1705                      1710  
 Gln Phe Arg Lys Ile  
                     1715

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 <211> 30  
 <212> PRT  
 <213> M. sexta

<400> 3  
 Met Leu Asp Tyr Glu Val Pro Glu Phe Gln Ser Ile Thr Ile Arg Val  
   1                      5                      10                      15  
 Val Ala Thr Asp Asn Asn Asp Thr Arg His Val Gly Val Ala  
                     20                      25                      30

<210> 4  
 <211> 16  
 <212> PRT  
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<220>  
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 <223> Xaa = Any Amino Acid

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 Met Xaa Glu Thr Tyr Glu Leu Ile Ile His Pro Phe Asn Tyr Tyr Ala  
   1                      5                      10                      15

<210> 5  
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<220>  
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 Met Xaa Xaa Xaa His Gln Leu Pro Leu Ala Gln Asp Ile Lys Asn His  
   1                      5                      10                      15

<210> 6  
 <211> 8  
 <212> PRT  
 <213> M. sexta

<220>  
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 <222> (1)...(8)

<223> Xaa = Any Amino Acid

<400> 6

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1 5

<210> 7

<211> 9

<212> PRT

<213> M. sexta

<220>

<221> VARIANT

<222> (1)...(9)

<223> Xaa = Any Amino Acid

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Met Asn Phe Xaa Ser Val Asn Xaa Glu  
1 5

<210> 8

<211> 109

<212> PRT

<213> Mouse

<400> 8

Glu	Trp	Val	Met	Pro	Pro	Ile	Phe	Val	Pro	Glu	Asn	Gly	Lys	Gly	Pro
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Phe	Pro	Gln	Arg	Leu	Asn	Gln	Leu	Lys	Ser	Asn	Lys	Asp	Arg	Gly	Thr
			20					25					30		
Lys	Ile	Phe	Tyr	Tyr	Ser	Ile	Thr	Gly	Pro	Gly	Ala	Asp	Ser	Pro	Pro
		35					40					45			
Glu	Gly	Val	Phe	Thr	Ile	Glu	Lys	Glu	Ser	Gly	Trp	Leu	Leu	Leu	His
	50					55					60				
Met	Pro	Leu	Asp	Arg	Glu	Lys	Ile	Val	Lys	Tyr	Glu	Leu	Tyr	Gly	His
65					70					75					80
Ala	Val	Ser	Glu	Asn	Gly	Ala	Ser	Val	Glu	Glu	Pro	Met	Asn	Ile	Ser
				85					90					95	
Ile	Ile	Val	Thr	Asp	Gln	Asn	Asp	Asn	Lys	Pro	Lys	Phe			
			100					105							

<210> 9

<211> 105

<212> PRT

<213> Drosophila

<400> 9

Glu	Asp	Thr	Val	Tyr	Ser	Phe	Asp	Ile	Asp	Glu	Asn	Ala	Gln	Arg	Gly
1				5					10					15	
Tyr	Gln	Val	Gly	Gln	Ile	Val	Ala	Arg	Asp	Ala	Asp	Leu	Gly	Gln	Asn
			20					25					30		
Ala	Gln	Leu	Ser	Tyr	Gly	Val	Val	Ser	Asp	Trp	Ala	Asn	Asp	Val	Phe
		35					40					45			
Ser	Leu	Asn	Pro	Gln	Thr	Gly	Met	Leu	Thr	Leu	Thr	Ala	Arg	Leu	Asp
	50					55					60				
Tyr	Glu	Glu	Val	Gln	His	Tyr	Ile	Leu	Ile	Val	Gln	Ala	Gln	Asp	Asn
65					70					75					80

Gly Gln Pro Ser Leu Ser Thr Thr Ile Thr Val Tyr Cys Asn Val Leu  
85 90 95  
Asp Leu Asn Asp Asn Ala Pro Ile Phe  
100 105

<210> 10  
<211> 92  
<212> PRT  
<213> Protocadherin

<400> 10  
Ala Ser Pro Val Ile Thr Leu Ala Ile Pro Glu Asn Thr Asn Gly Ser  
1 5 10 15  
Leu Phe Pro Ile Pro Leu Ala Ser Asp Arg Asp Ala Asn Glu Leu Gln  
20 25 30  
Val Ala Glu Asp Gln Glu Glu Lys Gln Pro Gln Leu Ile Val Met Gly  
35 40 45  
Asn Leu Asp Arg Glu Arg Trp Asp Ser Tyr Asp Leu Thr Ile Lys Val  
50 55 60  
Gln Asp Gly Gly Ser Pro Pro Arg Ala Thr Ser Ala Leu Leu Arg Val  
65 70 75 80  
Thr Val Leu Asp Thr Asn Asp Asn Ala Pro Lys Phe  
85 90

<210> 11  
<211> 106  
<212> PRT  
<213> M. sexta

<400> 11  
Ile Val Thr Glu Asn Ile Trp Lys Ala Pro Lys Pro Val Glu Met Val  
1 5 10 15  
Glu Asn Ser Thr Pro His Pro Ile Lys Ile Thr Gln Val Arg Trp Asn  
20 25 30  
Asp Pro Gly Ala Gln Tyr Ser Leu Val Asp Lys Glu Lys Leu Pro Arg  
35 40 45  
Phe Pro Phe Ser Ile Asp Gln Glu Gly Asp Ile Tyr Val Thr Gln Pro  
50 55 60  
Ile Asp Arg Glu Glu Lys Asp Ala Tyr Val Phe Tyr Ala Val Ala Lys  
65 70 75 80  
Asp Glu Tyr Gly Lys Pro Leu Ser Tyr Pro Leu Glu Ile His Val Lys  
85 90 95  
Val Lys Asp Asn Asp Asn Pro Pro Thr Cys  
100 105

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<211> 5  
<212> PRT  
<213> M. sexta

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<222> (1)...(5)  
<223> Xaa = Any Amino Acid

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Ala Xaa Asp Xaa Asp

1

5

<210> 13

<211> 7

<212> PRT

<213> M. sexta

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<222> (1)...(7)

<223> Xaa = Any Amino Acid

<400> 13

Asp Xaa Asn Asp Xaa Xaa Pro

1

5

<210> 14

<211> 5

<212> PRT

<213> M. sexta

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<222> (1)...(5)

<223> Xaa = Any Amino Acid

<400> 14

Xaa Xaa Asp Xaa Asp

1

5

<210> 15

<211> 5

<212> PRT

<213> M. sexta

<220>

<221> VARIANT

<222> (1)...(5)

<223> Xaa = Any Amino Acid

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Asp Xaa Asn Asp Asn

1

5

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Cont